

Thermal Anisotropies of Ion Beams in the Solar Wind

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The high speed wind as observed by Ulysses is characterized by two separate proton beams which are essentially always present, along with an alpha particle beam. Recent progress in the Ulysses/SWOOPS data processing algorithm have made it possible to obtain estimates of the parallel and perpendicular temperatures of these beams corrected for the instrumental response. At present, the algorithm is working well for proton distributions typical of what is seen within 4 AU of the Sun and we are working to extend this range. The anisotropy results available at the time of the meeting will be presented, along with a discussion of implications for heating of the distributions and growth rate of solar wind instabilities. The temperature anisotropy of the beam is a critical parameter in the determination of the beam/core relative drifts at threshold of electromagnetic proton/proton instabilities. This anisotropy, therefore, is an important factor in establishing whether these instabilities act to limit this relative drift in the solar wind.